

Linear optimization method by using a new iterative algorithm for available transfer capability (ATC)

ABSTRACT

Fast and accurate algorithms to compute Available Transfer Capabilities (ATC) are important for electricity markets. Most studies involved load flow based and contingencies that often can be performed in reasonable time with the use of linear methods. This paper presents a simple and accurate method for calculating ATC with a linear optimization method. Since the limitations of linear ATC calculations is the error produced by neglecting the nonlinear nature of real power flows. This paper presents Krylov Subspace methods that can reduce this error. By applying these methods for calculating ATC, the speed and the accuracy of them are calculated and compared to find the best one. All computations are tested on IEEE-30 bus system in MATLAB 7.1.

Keyword: Available transfer capability (ATC); Transmission capability margins; Krylov subspace; Iteration methods; Linear optimization programming; Power system reliability